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tion. This soil, on some ridges north of the Spokane where there is not much rain, is the richest I saw on the whole route, and produces fine crops near Antoine Plant's prairie. To the south it is covered with grass, etc., and where naturally irrigated by streams, other plants grow luxuriantly. There is then nothing unfavorable to trees in the soil, and indeed, west of the Cascade Range, almost the whole country is basaltic and covered with dense forests. We must look therefore to dryness as the cause of their absence, and so far the observations of the Medical Department, U. S. A., at Fort Walla Walla, Dalles, and Sincoe, show a remarkably small amount of moisture. For particulars, however, I must refer to the "Report on Statistics," etc., of Surgeon General Lawson, for 1860, prepared by Dr. Richard H. Coolidge, U. S. Army.

THE GOLDEN-WINGED WOODPECKER.

BY AUGUSTUS FOWLER.

THIS is an exceedingly valuable bird, especially if it resides near lands of a light or sandy soil. Its food is almost wholly composed of insects, of which ants form the principal living of the young fledged birds. These insect pests form themselves into colonies, and excavate, a little below the surface of the soil, one or more chambers, with galleries leading to them, bringing the soil from around the roots of the grass, leaving them to a free circulation of air, that soon causes them to wither. The Woodpecker sits by the mounds of dirt thrown out by the insects, and as one appears creeping from his den the bird draws him into his mouth with his tongue, and swallowing him, continues to do so until he has destroyed the whole republic. I have examined the birds at such times and have found their stomachs distended to their fullest extent; indeed it seemed as if they could not

contain one more insect, and yet, when taken, they were still in the act of devouring them.

The sagacity of these birds is wonderful in determining the locality of an insect that is concealed in the branches of trees, or in the solid trunk of a sapling. Instances daily occur of the benefits of the Woodpecker in extracting the borer from trees, and so nicely does he determine their exact locality that his first effort to secure his prize is successful. The bird alights on the trunk of the tree; the fact that a borer is gnawing at its heart is evident to him, and he hops around and down the tree, giving it a few taps with his bill, then slowly ascending and continuing the strokes lightly, when suddenly he stops and strikes a few successive strokes in the same place. He stops longer at that spot than at any other; he moves up the tree and taps there, but descends immediately to his last position. He has determined by the sound the locality of the worm and prepares to take him out. Fixing himself firmly on the side of the tree he throws his head back, and with a powerful stroke drives his chisel-pointed bill quite through the bark and into the solid wood of the tree. Stroke succeeds stroke in earnest repetition until he strikes upon his victim, and then thrusting his long barbed tongue into his body draws him out and devours him.

The Golden-winged Woodpeckers are, in some instances, permanent residents in New England; the larger part of them, however, migrate South, and return from the middle to the last of March. After having returned and selected their mates they soon begin to look up a place for a residence. The tree being selected they begin excavating it by digging a round hole, about two inches and a half in diameter, for the entrance, and continuing it the same size for one or two inches, then immediately widen it to about seven and a half or eight inches in diameter, and extend it about the same size to a depth of from eighteen to twenty inches, when it is finished. The chips they make in excavating it, except a

few of the finest, are mostly thrown out of the entrance on the ground, which reveals their nesting place.

In the few chips remaining in the hole the female makes a slight hollow, and lays from six to eight semi-transparent and highly polished white eggs. They measure $1\frac{1}{8}$ of an inch in length, by $\frac{7}{8}$ of an inch in breadth. While incubation is going on, the male, when he relieves the female from setting, flies to the tree and alights near the entrance, and emits the notes resembling in sound the syllables "flicker, flicker," and peeps around the tree at the entrance to see when the female leaves. On hearing him she quits the nest, when he immediately takes charge of the eggs until she returns. When the young are large enough they leave the cavity and creep to the top of the tree, locating themselves on different parts of it, and are fed by the old birds until they can fly quite well, when they are taken to the fields and pastures or woodlands, where they soon learn to provide for themselves. Although the usual number of eggs laid by these birds for a brood are from six to eight, yet they will sometimes lay a hundred, when they are taken from the nest as often as they are laid, leaving one for a nest egg. Trials have been made of the number of eggs they would hatch at one setting. A dozen of eggs were taken from the nest of one, and then the bird was allowed to lay the usual quota for a brood; then to these the number that were taken were added, and the bird commenced setting. In due time these eggs were hatched, and when the young birds were old enough to creep about the tree, it literally swarmed with young woodpeckers.

These birds suffer exceedingly from the depredations of the Mottled Owl. I seldom find the breeding-place of this owl without finding the wing-feathers of the woodpecker scattered about it in greater quantities than those of any other birds. They often alight upon the ground, and perch crosswise on a limb of a tree, a thing which other species of woodpeckers are not accustomed to do. The Downy

Woodpecker (*Picus pubescens*) is a no less interesting bird than the Golden-winged Woodpecker (*Colaptes auratus*). They are equally beneficial and much more familiar. They breed in the orchard and in the trees about our dwellings with as much confidence as in the forest, and visit us in all seasons of the year, and are especially welcome in winter.

This bird receives the opprobrious name of "sap-sucker," a reproach which none casts upon him but the ignorant, who condemn him as mischievous without investigation, and then wickedly execute their judgment without mercy. In the latter part of September, and in all the months of October and November, this bird enters the orchard and selects those trees which have the smoothest bark and are the healthiest, and begins to pick small holes about one-quarter of an inch in diameter, quite through the bark, and from half an inch to an inch apart, in parallel lines around the trunk of the tree, which circles of holes are from one to two inches above each other. These lines of holes are extended up the whole length of the trunk of the tree, and sometimes around the larger limbs diverging from it.

It is well known that some of the insects injurious to fruit trees deposit their eggs in the latter part of summer and in the autumn, laying them under the bark and in crevices about the tree, in fact in any secret place they find. As they ascend the tree, perforated by the woodpecker, they are not at a loss to find a suitable place for their purpose. If they pass the first, second, or third tier of holes, there are others above them as well adapted to their wants, and in them they may deposit their eggs, and cover them with a covering indestructible by the weather. Others find in them a retreat from daylight and from storms, and in them some other insects lie dormant, shrouded in their silken cocoons. In this we see the wisdom of the Creator who supplies the wants of all his creatures. He teaches the ant, the squirrel, and the bee, to hoard and gather for themselves a sufficiency of food for winter; but to the Downy Woodpecker he has

given quite a different instinct. He has taught it to be a hunter, and has taught it also to know the habits of its game, and when, and where, and how to set its traps. How often do we see in winter and early spring, the Downy Woodpecker followed by a troop of Chickadees, visiting every tree in the garden, especially those that have been perforated by itself, searching every hole and crevice for insects and their eggs. It shows no disposition to quarrel with its company, but rather seems to take pleasure in directing their course through the forest and orchard by the notes of its shrill clarion voice. It admits the Nuthatch and Brown Creeper to its society, who join it with the full assurance of its friendship, and they roam with it in storm and in sunshine over a vast territory, destroying in their course millions of vermin in the embryo state. The insect-eating birds that visit us in the spring and stop a few months, retiring in autumn, are very beneficial to the horticulturist, but their services are not to be compared to those of the resident birds which feed upon insects in every stage of their life.

The Downy Woodpecker perforates decayed trees, or their branches, for their nesting places. When they select a horizontal branch, as they often do, they make a cavity in the limb to the extent of from ten to fifteen inches, towards the trunk of the tree, having the entrance leading to it on the underside of the branch; in such cases their nests are difficult to find. When they select an upright branch, or the trunk of a tree, it is dug out to the depth of from eight to twelve inches, and in the bottom of the hole, on the chips left for the purpose, the female deposits four or six pure white eggs, which measure in length six-eighths of an inch, and in breadth five-eighths of an inch.

To show what diligent and persevering birds they are, I will state a fact. A pair of Downy Woodpeckers selected a branch of a chestnut tree, which was broken off about four feet from the trunk of it, and about ten feet from the

ground. In it the birds had determined to make their home and began their operations. It was a piece of wood dried and thoroughly seasoned, without the least sign of decay. In the first day's labor, which was chiefly done by the male, they succeeded in penetrating the limb about one and one-half inches. The hole was conical in shape, the outer circle being finished or made large enough to admit the birds; then it gradually tapered to the smallest point. The second day they commenced to beat out the hole of sufficient size and depth, which was slowly executed, as hardly a particle of wood could be seen to fly off before their bills; yet they persevered, and in eleven days they succeeded in completing it, by digging four inches below the aperture. Although it cost the birds much time to procure this tenement they had the satisfaction of knowing it was a good one. There was no smell of rotten wood about it, but was clean, dry, and smoothly finished. In this nest were reared five young woodpeckers. The male was mostly seen about the premises, and I think he did the most labor in preparing their abode. When the young appeared he was also diligent in procuring their food.

In winter the Downy Woodpecker sometimes digs a hole in some rotten tree for a retreat in stormy weather, and to roost in.

NATURAL CARVINGS.

BY PROF. A. M. EDWARDS.

MANY of our readers have doubtless often admired and wondered at the exquisite carved ivory work sent forth by that strange, industrious, and ingenious people, the Chinese. No examples of their manipulative skill have attracted more attention, perhaps, than those balls within balls, each one more elaborately decorated than the other,